AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A transceiver including:

a single antenna adapted for simultaneously receiving a first signal and transmitting a second signal;

a signal processor for receiving from the antenna a third signal indicative of the first signal; and

a modulator disposed between the antenna and the signal processor for providing a fourth signal to the antenna for forming the second signal, the modulator varying the impedance between the antenna and the signal processor for providing the antenna with a simultaneous dual Q-factor, the Q-factor being high for the first signal and low for the second signal.

2-36. (Canceled)

37. (Currently Amended) A transceiver including:

a single antenna adapted for simultaneously receiving a first radio frequency (RF) electromagnetic signal and transmitting a second RF electromagnetic signal;

a signal processor for receiving from the antenna a third electrical signal based on the first RF electromagnetic signal; ~~and~~

a modulator disposed in series between the antenna and the signal processor for providing a fourth electrical signal to the antenna to produce the second RF electromagnetic signal, the modulator varying the series impedance between the antenna and the signal processor; and

wherein the modulator varies the impedance between the antenna and the signal processor, such that the antenna simultaneously has a high Q factor for signals received by the antenna and a low Q factor for signals transmitted from the antenna.

38. (Previously Presented) A transceiver according to claim 37 wherein the transceiver is a transponder and the first and second signals are modulated at a first frequency and a second frequency respectively, the first and second frequencies being different to each other.

39. (Previously Presented) A transceiver according to claim 38 wherein the transponder is passive and the signal processor includes processing circuitry and power storage means, wherein some of the power provided by the third signal is stored in the power storage means for subsequently powering the transponder.

40. (Previously Presented) A transceiver according to claim 39 wherein the impedance is varied between the high and the low value at a rate greater than the DC slew rate for the third signal.

41. (Previously Presented) A transceiver according to claim 40 wherein the impedance is a resistance.

42. (Previously Presented) A transceiver according to claim 37 wherein the antenna is a coil which is tuned by a capacitor.

43. (Canceled) A transceiver according to claim 42 wherein the modulator varies the impedance between the antenna and the signal processor, such that the antenna simultaneously has a high Q factor for signals received by the antenna and a low Q factor for signals transmitted from the antenna.

44. (Previously Presented) A transceiver according to claim 37 wherein the voltage across the antenna is modulated or varied in a predetermined manner to generate the second signal.

45. (Previously Presented) A transceiver according to claim 44 wherein the modulation or variation in antenna voltage corresponds to a proportional variation in the antenna current.

46. (Previously Presented) A transceiver according to claim 45 wherein the modulator means varies a low impedance which is disposed in series between the antenna and the signal processor to cause a variation in the voltage across the antenna.

47. (Previously Presented) A transceiver according to claim 46 wherein the low impedance is less than 10% of the total load impedance seen by the antenna.

48. (Previously Presented) A transceiver according to claim 46 wherein the impedance is modulated with an RF sub-carrier and data is modulated onto the sub-carrier for transmission.

49. (Currently Amended) A method for operating a transceiver including the steps of:

providing a single antenna adapted for simultaneously receiving a first radio frequency (RF) electromagnetic signal and transmitting a second RF electromagnetic signal;

providing a signal processor for receiving from the antenna a third electrical signal based on the first RF electromagnetic signal;

providing an impedance for modulation, via a modulator, the modulator being disposed in series between the antenna and the signal processor;

providing a fourth electrical signal to the antenna to produce the second RF electromagnetic signal; and

varying the impedance between the antenna and the signal processor.

50. (Previously Presented) A passive transponder including:

a single antenna adapted for simultaneously receiving and transmitting a first radio frequency (RF) electromagnetic signal and a second RF electromagnetic signal respectively;

a signal processor for:

receiving a third electrical signal from the antenna which is derived from the first RF electromagnetic signal; and

providing a fourth electrical signal derived from the third electrical signal;

a power storage means in parallel with the signal processor for absorbing some of the power of the third electrical signal, the absorbed power being subsequently used by the transponder;

a modulator disposed in series between the antenna and the power storage means for selectively varying the impedance therebetween to generate the second RF electromagnetic signal; and

a mixer for producing a fifth signal by combining the fourth electrical signal with a sub-carrier, the fifth signal being provided to the modulator.

51. (Previously Presented) A transponder according to claim 50 wherein the modulator varies the impedance in accordance with the fifth signal.

52. (Previously Presented) A transponder according to claim 51 wherein the impedance is a resistance.

53. (Previously Presented) A transponder according to claim 50 wherein the power storage means includes a capacitor.

54. (Previously Presented) An antenna adapted for simultaneously receiving and transmitting a first radiofrequency (RF) electromagnetic signal and a second RF electromagnetic signal respectively, the antenna including:

a tuned coil in which the first signal generates a first current and which supports a second current for generating said second signal; and

a modulator disposed in series with the coil, said first and second currents flowing through said modulator for providing said coil with a simultaneous dual Q factor, the Q factor being high for the first current and low for the second current.

55. (Previously Presented) An antenna according to claim 54 wherein the first current or a signal derived from the first current is provided to a signal processor whereby the modulator varies the impedance between the coil and the signal processor.

56. (Previously Presented) An antenna according to claim 55 wherein the impedance is a resistance which is switched between a predetermined value and negligible resistance.

57. (Previously Presented) A transceiver including:

a single antenna adapted for simultaneously receiving a first radio frequency (RF) electromagnetic signal and transmitting a second RF electromagnetic signal;

a signal processor for receiving from the antenna a third electrical signal indicative of the first signal; and

a modulator disposed in series between the antenna and the signal processor for providing a fourth electrical signal to the antenna to produce the second signal, the modulator varying the voltage across the antenna in a substantially stepwise manner to effect a variation in the current flowing through the antenna between a low and a high value for allowing transmission of the second signal without substantially affecting the receiving efficiency of the antenna.

58. (Previously Presented) A transceiver according to claim 57 wherein the first signal includes a carrier signal and the variation of the current between the low and the high value occurs within less than or about one period of the carrier signal.

59. (Previously Presented) A method for operating a transceiver including the steps of:

providing an antenna adapted for simultaneously receiving a first radio frequency (RF) electromagnetic signal and transmitting a second RF electromagnetic signal;

providing a signal processor for receiving from the antenna a third electrical signal based on the first signal;

providing a modulator disposed in series between the antenna and the signal processor;

providing a fourth electrical signal to the antenna to produce the second signal; and

varying the impedance of the modulator, thereby to vary the voltage across the antenna in a substantially stepwise manner to effect a variation in the current flowing through the antenna between a low and a high value for allowing transmission of the second signal without substantially effecting the receiving efficiency of the antenna.

60. (Previously Presented) A transceiver including:

a single antenna adapted for simultaneously receiving a first radio frequency (RF) electromagnetic signal having a first predetermined frequency and, in response thereto, generating a second electrical signal;

receiving circuitry being responsive to the second signal;

tuning circuitry for providing the antenna with a resonant frequency at or about the first predetermined frequency; and

a modulator disposed in series between the antenna and the tuning circuitry for varying the impedance therebetween such that the second signal generates a third electrical signal in the antenna at a second predetermined frequency and the antenna transmits a fourth RF electromagnetic signal derived from the third signal.

61. (Previously Presented) A transceiver according to claim 60 wherein the first and second predetermined frequencies are substantially different.

62. (Previously Presented) A transceiver according to claim 60 wherein the antenna includes a coil and the tuning circuit includes a capacitor connected in parallel with the coil.

63. (Previously Presented) A transceiver according to claim 62 wherein the antenna consists of a coil and the tuning circuit consists of a capacitor.

64. (Previously Presented) A transceiver according to claim 60 wherein the modulator is connected in series with the capacitor.

65. (Previously Presented) A transceiver according to claim 60 wherein the receiving circuitry, in response to the second signal, actuates the modulator to provide the third signal.

66. (Previously Presented) A transceiver according to claim 65 wherein the third signal is modulated in accordance with a data signal specific to that transceiver.

67. (Previously Presented) A transceiver according to claim 66 wherein the data signal is stored in the receiving circuitry and selectively provided to the modulator.

68. (Previously Presented) A transceiver according to claim 67 wherein the second signal is the current generated in the antenna by the first signal.

69. (Previously Presented) A transceiver according to claim 67 wherein the second signal is the voltage induced across the tuning circuitry by the first signal.

70. (Currently Amended) A tuned antenna including:

a single coil adapted for:

receiving a first radio frequency (RF) electromagnetic signal having a first predetermined frequency;

generating a second electrical signal;

receiving a third electrical signal; and

transmitting a fourth RF electromagnetic signal derived from the third signal;

a capacitor connected in parallel with the coil for providing a resonant frequency at or about the first predetermined frequency; and

a modulator disposed in series with the capacitor for providing a varying impedance such that the second signal generates the third electrical signal in the coil at a second predetermined frequency.

71. (Previously Presented) A method for receiving and transmitting a first radio frequency (RF) electromagnetic signal and a fourth RF electromagnetic signal respectively to and from a transceiver, the method including the steps of:

receiving the first signal with an antenna and, in response thereto, generating a second electrical signal within the antenna, the first signal having a first predetermined frequency;

providing the second signal to receiving circuitry;

tuning the antenna with tuning circuitry to have a resonant frequency at or about the first predetermined frequency; and

varying the impedance between the antenna and the tuning circuitry such that the second signal generates a third electrical signal in the antenna at a second predetermined frequency;

deriving a fourth signal from the third signal; and

the antenna transmitting the fourth signal.

72. (Previously Presented) A method for receiving and transmitting a first radio frequency (RF) electromagnetic signal and a fourth RF electromagnetic signal respectively, the method including the steps of:

receiving the first signal with a coil having a first predetermined frequency;

connecting a capacitor in parallel with the coil for providing the antenna with a resonant frequency at or about the first predetermined frequency;

generating a second electrical signal from the first signal; and

disposing a modulator in series with the capacitor for both providing a varying impedance such that the second signal generates a third electrical signal in the coil at a second predetermined frequency;

transmitting a fourth signal which is derived from the third signal;

wherein the coil receiving the first signal and the coil transmitting the fourth signal are the same coil.

73. (Currently Amended) A transceiver including:

a single antenna adapted for simultaneously receiving a first signal and transmitting a second signal, the antenna being a tuned coil in which the first signal generates a first current and which supports a second current for generating the second signal;

a signal processor for receiving from the antenna a third signal indicative of the first signal; and

a modulator disposed between the antenna and the signal processor for providing a fourth signal to the antenna for forming the second signal, the modulator varying the impedance between the antenna and the signal processor for providing the antenna with a simultaneous dual Q-factor, the Q-factor being high for the first signal and low for the second signal.

74. (Currently Amended) A transponder including:

a single antenna adapted for simultaneously receiving a first signal and transmitting a second signal, the first and second signals are modulated at a first frequency and a second frequency, respectively, the first and second frequencies being different to each other;

a signal processor for receiving from the antenna a third signal indicative of the first signal; and

a modulator disposed between the antenna and the signal processor for providing a fourth signal to the antenna for forming the second signal, the modulator varying the impedance between the antenna and the signal processor for providing the antenna with a simultaneous dual Q-factor, the Q-factor being high for the first signal and low for the second signal.